

examples and a female in the collection from Estcourt having only four spots.

58. *GEGENES LETTERSTEDTI* Wallengr.

♂ ♂, Machako's, 3rd and 10th July; ♀ ♀, Kikuyu, 17th and 19th July, 1898.

"♀. Greenish-white ova." (*R. C.*)

59. *PARNARA MATHIAS* Fabr.

♂ ♂, ♀, Machako's, 23rd and 25th June; Kikuyu, 8th September, 1898.

60. *PARNARA BORBONICA* Boisd.

♂, Ngongo, 6450 feet, Masailand, 3rd August, 1898.
A very fresh and brightly coloured example.

61. *RHOPALOCAMPTA FORESTAN* Cramer.

Machako's, 3rd July, 1898.

62. *RHOPALOCAMPTA PISISTRATUS* Fabr.

Kikuyu, 6400 feet, 17th July, 1898.

EXPLANATION OF PLATE XXV.

- Fig. 1. *Chrysophanus abbotti*, ♂, p. 423.
2, 2a. *Scolitantides crawshayi*, ♂, p. 422.
3, 3a. *Evers kedonga*, ♀, p. 422.
4. *Phrissura nyasana*, ♀, p. 425.
5. *Acræa astrigera*, ♂, p. 421.
6. *Pyrgus machacoana*, ♀, p. 426.
7, 8. *Kedestes wallengreni*, var. ♂, ♀, p. 426.

April 18, 1899.

Prof. G. B. HOWES, LL.D., F.R.S., V.P., in the Chair.

The Secretary read the following report on the additions to the Society's Menagerie during the month of March 1899 :—

The total number of registered additions to the Society's Menagerie during the month of March was 83, of which 43 were by presentation, 31 by purchase, 3 were born in the Gardens, and 6 were received on deposit. The total number of departures during the same period, by death and removals, was 98.

Amongst the additions may be specially noticed :—

1. A female of the Kiang or Wild Ass of Tibet, received on deposit March 11th and subsequently purchased. The Kiang makes a good addition to the Society's series of the Horse-family (*Equidæ*), only two examples of this scarce animal having been previously in the Gardens. These were also females, of which one

was presented by the late Major W. E. Hay, F.Z.S., in 1859, and the other was received on deposit in 1885.

2. An example of Pel's Owl (*Scotopelia peli*), a fine and rare species of Owl from the Niger Territory, presented by Lieut. E. V. Turner, R.E., March 28th.



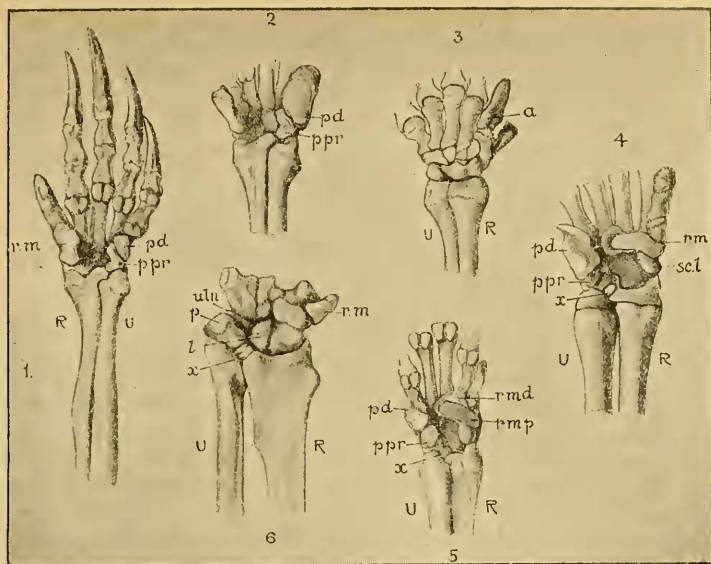
Pedetes caffer.

3. A Cape Jumping-Hare (*Pedetes caffer*), presented by Mr. W. Champion of Durban, Natal, March 31st. This singular Rodent seems to be a very delicate animal, which does not thrive in captivity. Though several of our correspondents have attempted to send us specimens, this is the first that has reached us alive.

Mr. Smit's drawing shows its attitude in life, with the fore feet scarcely visible as it sits up. It is semi-nocturnal in habits.

Dr. C. I. Forsyth Major exhibited the carpus of the fossorial Rodent *Ctenomys* (see figures, p. 429), and made the following remarks:—

The carpus exhibited was taken from the dry skin of a species of the fossorial Hystricoid *Ctenomys*, from the Province of Salta (Argentina), which the Natural History Museum owes to Dr. Moreno. It presents three special peculiarities, to which I wish to draw attention.



Carpus of *Ctenomys*, etc.

Fig. 1. *Ctenomys* sp. (Br. Mus. No. 97. 10. 3. 63). Left manus, palmar view. R=radius; r.m.=radiale marginale. U=ulna; ppr=proximal pisiform; pd=distal pisiform.—Fig. 2. *Ctenomys* sp., Prov. Salta (Argentina). Left carpus, palmar view.—Fig. 3. Same specimen as Fig. 2. Left carpus, dorsal view. a=interphalangeal dorsal ossicle.—Fig. 4. *Mus macleari* Thos., jun. Right carpus, palmar view. r.m.=proximal marginal radiale. x=accessory palmar ossicle of the carpus; sc.l="scapholunar."—Fig. 5. *Arvicanthus niloticus*. Right carpus, palmar view; r.m.p=proximal marginal radiale; r.m.d=distal marginal radiale.—Fig. 6. *Lepidolemur microdon* Maj. Right carpus, palmar view. l=lunar; uln=ulnare. The bones marked x and p (pisiform) are separated by a short meniscus of connective tissue, which unfortunately is made to appear in the figure as a distinct bone.—Figs. 1-3 and 6 slightly over nat. size; figs. 4 and 5 about double nat. size.

I.

On the dorsal side of the thumb (a, fig. 3), overlapping the interphalangeal articulation, is a lengthened ossicle, attached by a strong ligament to the proximal end of the ungual phalanx, and gliding on the capitulum of the second. The anterior and posterior extremities of this ossicle are slightly swollen, the shaft being restricted, so that it somewhat resembles a diminutive phalanx.

So-called sesamoid bones have been here and there noticed, as rare occurrences, on the dorsal surface of the phalangeal articulations in Mammalia; they will be enumerated hereafter; but I have nowhere found a mention of an ossicle on the interphalangeal articulation of the thumb. On investigating the matter more closely, I have found the same ossicle constantly in the four species of *Mus* up to the present examined, including our two common

larger species; and also in the Malagasy Rodent *Brachyuromys*, in *Spalax*, and in *Lagomys*. I believe it to be a frequent occurrence amongst Mammalia, but to have escaped notice, because it is always cut away in prepared skeletons. The individuals in which it was found have all been dissected under my supervision. In *Mus* and *Lagomys* the ossicle is of a more irregular shape and reduced in size.

The suggestion which at once offers itself is, that we have before us the missing skeletal element of the thumb, which has become reduced after having been displaced from its original position, and is now gradually vanishing. In the following I shall consider the greater or less probability of such a hypothesis.

It has been maintained at one time, that the thumb and the toe have the same number of three phalanges as the other fingers and toes, and that the missing bone is a metacarpal (metatarsal): this on the ground that the proximal of the three segments has a proximal epiphysis characteristic of the phalanges, but not the distal one characteristic of metacarpals and metatarsals.¹ Allen Thompson pointed out, in an interesting article, that the above is by no means the rule; his observations led him to the conclusion "of the inconstancy of the absence of a distal epiphysis in the first metacarpal or metatarsal bone, and . . . that we must distrust the position of the epiphysis to these bones as the ground of a homological distinction."² Dollo has since shown that in the young *Varanus* all the metacarpals and metatarsals have a proximal as well as a distal epiphysis³; a fact which, held together with the cases in Mammalia quoted and described by A. Thompson, and to which I could add further instances, makes it probable that all the Mammalian metacarpals and metatarsals had originally likewise two epiphyses.

Having discarded as invalid the reasons which would assign three phalanges to the first digit and toe, the next question to answer is, whether the missing phalanx is the first, the second, or the third. Pfitzner has pointed out that, in those Mammals in which the ungual phalanx has either totally (some Monkeys) or almost totally (Wombat, Elephant) disappeared, the next phalanx shows not the least tendency to assume the form of the former⁴. He concludes from this⁵ that it is the middle phalanx which has disappeared, and that its disappearance is due

¹ Struthers: "On Variation in the number of Fingers and Toes, etc." Edinb. New Philos. Journ. vol. xviii. p. 111 (1863).

² "On the Difference in the Mode of Ossification of the first and other Metacarpal and Metatarsal Bones." Journ. Anat. & Phys. iii. pp. 131-146 (1869).

³ Zool. Anz. vii. p. 80 (1884).

⁴ W. Pfitzner, "Die kleine Zehe." Archiv f. Anat. u. Entwicklungsgesch. p. 34 (1890).

⁵ *L. c.* pp. 34, 35: "Ich glaube somit annehmen zu müssen, dass auch die Zweigliedrigkeit des Daumens und der grossen Zehe der Säugethiere und des Menschen, und ebenso die Dreigliedrigkeit der übrigen Zehen und Finger in der Weise zu Stande gekommen ist, dass immer das jeweilige Endglied das nächstfolgende durch Verschmelzung sich assimiliert hat."—See also Pfitzner, in Morph. Arb. i. p. 605 (1892): "Das Interphalangealgelenk des ersten Fingers bin ich geneigt mit dem proximalen Interphalangealgelenk der anderen Finger zu homologisiren, seine Endphalanx als Verschmelzungsproduct von Mittelphalanx und ursprünglicher Endphalanx anzusehen."

to its having been fused ("assimiliert") with the terminal phalange. The condition described in *Ctenomys* etc., while supporting the first part of Pfitzner's contention, seems however to point out, that in part at least of the Mammalia the disappearance of the second phalange has been brought about by elimination and not by "assimilation."

In the pes of the Insectivore *Chrysochloris*, the phalanges of all the five toes are reduced to two, and all the five toes show a dorsal ossicle riding on the interphalangeal articulation. This coincidence would seem to be significant; but I have at once to state, that in the manus of *Oryzoryctes tetradactylus*, which has the normal number of three phalanges in the four digits present, I have found the ossicle in question on the distal interphalangeal articulation of the second digit, and do not doubt that it was present on the others also.

The only recorded dorsal ossicles of Man occur on the metacarpo-phalangeal articulation of the thumb, and are noticed by Kulmus¹; one case also having been found by Pfitzner²; in the same place, on the great toe an ossicle is recorded by Kulmus³. In the Canidæ, dorsal ossicles are limited to the metacarpo- and metatarso-phalangeal articulations⁴. The dorsal ossicles of the manus of *Talpa europæa* have been figured repeatedly (Blainville, Owen, Flower, &c.), but nowhere do I find a reference made to them in the description of the skeleton, which almost seems to show that they have not been recognized as free ossicles, but considered to be processes of the phalanges. In this Insectivore the three middle fingers of the manus have each two dorsal ossicles, one on the metacarpo-phalangeal articulation, and one on the proximal interphalangeal. In the first and fifth digits only the latter articulation shows an ossicle. In the pes I find them only on the proximal interphalangeal articulations of all five toes. In a skeleton of *Condylura*, the dorsal ossicles seem to have been partly cut away, so that I cannot make a definite statement. It is noteworthy that, on the proximal interphalangeal articulation of the fifth digit and on the homonymous articulation of the fourth toe, two ossicles are present. In a mounted skeleton of *Myogale moschata* in the Natural History Museum, I find dorsal ossicles on the proximal interphalangeal articulations of the second, third, fourth, and fifth digits (on the latter there are two ossicles). In the pes, the articulator has almost thoroughly done his "duty," for there is only one dorsal ossicle present; viz., on the proximal interphalangeal articulation of the third toe. In *Oryzoryctes tetradactylus*, dorsal ossicles, in addition to the above-mentioned, occur also on the second, third, and fourth proximal interphalangeal articulations of the manus, as well as on the same articulation of the fifth toe, and may have been cleaned away in the other proximal interphalangeal,

¹ Kulmus, 'Tabulæ anatomicae,' p. 62 (1732); id., *Miscellanea Med. Phys.* ii. p. 328 (1720). Quoted from Pfitzner, *Morph. Arb.* i. pp. 604, 742 (1892).

² *Morph. Arb.* i. pp. 604, 685 (1892).

³ *L. c.*; cf. Pfitzner, *l. c.* p. 742.

⁴ See Pfitzner, *Morph. Arb.* i. p. 603 (1892).

as well as in the metacarpo- and metatarso-phalangeal articulations.

Among the Rodents, I have for the present come upon dorsal ossicles—apart from the one on the first digit—in *Lagomys*, viz., on the metacarpo-phalangeal articulation of the second, third, and fourth digits, and in *Spalax*. In the manus of the latter, dorsal ossicles are present on the proximal interphalangeal articulations of the 2nd–5th fingers; in the pes, on the interphalangeal articulation of the first, and on the proximal interphalangeal articulations of the four other toes. As regards Edentates, it has been stated that “a sesamoid bone is developed on the dorsal side of the metacarpal-phalangeal articulations” of *Orycteropus*¹. In the skeletons of the Cape Anteater available to me, all traces of these had been carefully made to disappear.

From the above fragmentary evidence it can be argued that careful research will show these dorsal “sesamoids” to be a not uncommon occurrence; it will then be time to investigate them more closely. They too may have been originally intercalated between the phalanges, and would point towards a more remote condition than does the interphalangeal dorsal ossicle of the thumb. As to the opinion that their function is to facilitate the sliding of the tendons over osseous protuberances, and to enlarge the angle of insertion of the tendons, I may be allowed to refer to what Pfitzner has said on the subject².

II.

The pisiform of *Otenomys* is composed of two bones (figs. 1 & 2), as found by von Bardeleben in *Bathyergus maritimus*³, and moreover the distal one has, in one species (fig. 2), a horny sheath, comparable to the nail-like structure—found by O. Thomas and described by von Bardeleben⁴—on the so-called præpollex of *Pedetes*; and to a somewhat similar one stated by Prof. Howes to overlie the enlarged “præhallux” of *Cercolabes*⁵. The two discoveries of von Bardeleben⁶—by the way, the two bones of *Pedetes* were described by Meckel in 1825—are among his chief arguments in support of his assumption of a sixth and seventh finger; accordingly, the proximal bone of the pisiform of *Bathyergus* was considered “as in all probability the carpal, and

¹ Flower: ‘An Introduction to the Osteology of the Mammalia,’ 3rd ed., p. 309 (1885).

² “Erläutern wir dies an dem Beispiel der Sesama dorsalia. Wenn irgend Jemand, so hätten alsdann die ‘Greifhänder’ solche nöthig, die Affen und der Mensch; warum finden wir sie aber statt dessen bei den Caniden, bei denen das betreffende Gelenk fast immer in Ueberstreckung bleibt? Warum nicht eher bei den Feliden, die in diesem Gelenk schon viel energischer beugen?” (Morph. Arb. i. p. 610, 1892).—Besides, these dorsal ossicles of Canidæ are only loosely connected with the extensor tendons (“an die Strecksehnen nur locker angeheftet”) (id. ib. p. 604). See also ib. pp. 567–571, 609–612.

³ P. Z. S. 1889, p. 260, pl. xxx. fig. 3.

⁴ Id. ib.

⁵ L. c.; Bardeleben, l. c. p. 260, footnote.

⁶ K. v. Bardeleben: “Hand und Fuss. Referat erstattet auf der 8. Vers. d. Anat. Ges. in Strassburg” (Verh. d. Anat. Ges., viii. p. 283, 1894).

the distal as the metacarpal segment of the postminimus."¹ In his last utterances on the subject², neither the pisiform and calcaneus, nor the so-called præpollex and præhallux, are considered as true carpal and tarsal bones, but "they have the same rank and position as the metacarpal and metatarsal bones."

What for palæontologists has been scarcely doubtful from the beginning of the discussion, becomes still clearer by the recent researches, viz., that the Tetrapoda have always been pentadactyle³; so that we may use "Pentadactylia" as synonymous with Tetrapoda. The remains of supernumerary rays must be traced to stages beyond the tetrapodous. Although a finger (toe) is a ray or part of one, the more general term "ray" (Strahl) is not synonymous with finger (toe); to use the two terms promiscuously is equivalent to deliberately confusing the discussion.

Where we meet among Mammals with an especial development of those supernumerary rays, this condition can always be traced to their secondary adaptation to special functions, as was long ago insisted upon by Winge and others⁴.

As to the pisiform, a more or less ossified distal element seems to be a common occurrence among Rodentia; apart from *Bathyergus* and *Ctenomys*, I find it in all the species of *Mus* up to the present examined (*pd.* fig. 4), including *Mus decumanus* and *Mus alexandrinus*; it is present too in *Brachyuromys ramirohitra* and in *Arvicanthus niloticus* (fig. 5, *pd.*). In all of these its special development is apparently due to an adaptation to either climbing or fossorial functions (to the latter in *Bathyergus*, *Ctenomys*, *Mus nativitatis*), or to both combined.

The so-called os Daubentonii of the Gibbon, about which more will be said farther on, is according to an observation by Leboucq, the most proximal part of the Mammalian pisiform; from its position it cannot be considered as an "ulnare antebrachii" (Thilenius): but seems to be the only part of the pisiform belonging to the carpus.

¹ P. Z. S. 1889, p. 260.

² P. Z. S. 1894, p. 373.—'Hand und Fuss,' p. 312.

³ Cf. e. g. Emery, in Semon's 'Forschungsreise,' ii. p. 399 (1897): "Die Zahl der echten Finger und Zehen ist und war immer auf fünf beschränkt."

⁴ In his "Referat" (p. 336), von Bardeleben admits that this may be the case with the "præpollex" of *Pedetes*, although on a preceding page the same had been adduced as a convincing argument in favour of his case: "... drittens suchte Ref. nach Säugetieren, die nicht nur das Rudiment eines Præpollex, sondern einen 'wirklichen Finger' hätten—im Sinne Gegenbaur's, der dafür ein Metacarpale und einige Phalangen verlangt.

"Nach den alten, so recht für den Wahlspruch eines Naturforschers geeigneten Worte: 'Suchet, so werdet ihr finden,' gelang es damals (1889) auch, nicht nur bei Reptilien, fossilen und lebenden Schildkröten u. a. einen Præpollex und Præhallux nachzuweisen, sondern sogar Säugetiere zu finden, bei denen der Præpollex (*Pedetes capensis*), oder der Postminimus (*Bathyergus maritimus*) aus zwei Knochen besteht . . . *Pedetes* besitzt aber nicht nur zwei Knochen im Præpollex-skelet, sondern einen wirklichen 'Finger' mit einem breiten, feingestreiften Nagel, mit Falz etc., wie Ref. für die drei Londoner Exemplare festgestellt hat." (*l. c.* p. 283).

Neither is the large cartilage supporting the patagium of Sciuropteri an "ulnare antebrachii," as supposed by Thilenius¹, from an erroneous interpretation of the figured skeleton of "*Pteromys volucella*,"² In the only skeleton of a Flying-Squirrel in the Nat. Hist. Mus. in which this part has been preserved (*Pteromys magnificus*), it is chiefly attached to the distal end of the pisiform and, besides, by a much smaller ramification, to the tuberosity of the fifth metacarpal. To judge from its position, it is therefore in the main the homologue of the distal pisiform of Muridæ and *Ctenomys*, and possibly of the pisiform epiphysis of many other Mammals.

A dependency of the pisiform is likewise the curious sub-cylindrical structure which in *Chrysochloris* "simulates a third antebrachial bone," and is by Dobson³ and others taken for the ossified tendon of the flexor digitorum profundus. In fact, the tendons for the four digits take their origin from the distal end of this bone; from this it does not, however, necessarily follow that the bone is an ossified tendon. At the dorsal side of its distal base it is provided with two facets, the larger ulnar one for the "ulnar sesamoid," the smaller radial one for a volar and distal projection of the lunar. More about this remarkable structure will be said elsewhere.

III.

In the fore-limb of *Ctenomys* occurs further an unusually prominent process of the radius, on the volar side of its distal ulnar end (figs. 1 & 2). In order to come to a clearer understanding, I looked for younger stages of *Ctenomys*. None being available, I resorted to *Mus*, in younger specimens of which I find in the same place, intercalated between the pisiform and the radius, a distinct ossicle (*x*, fig. 4), which later on becomes fused with the radius, thus forming the above-mentioned process. I have since found the same ossicle, though much smaller, in the fore-limb of a young individual of the Malagasy Rodent *Brachyuromys ramirohitra*, as well as in *Arvicanthis* (*x*, fig. 5). In the Rodents in which the ossicle occurs, no distinct lunar is known; they are therefore said to have a scapho-lunar bone, it being supposed that the lunar is fused with the scaphoideum.

At one time a similar statement was made with regard to Marsupials, but eventually in several genera a distinct lunar bone, although sometimes very minute, has been traced. In *Phascolarctus* no distinct lunar is known in the adult: however, in his recent memoir "Beiträge zur Entwicklungsgeschichte und Morphologie des Hand- und Fuss-skelets der Marsupialier,"⁴ Emery has described and figured sections of embryonic stages of *Phascolarctus cinereus*, in which appears an element which "on account of its

¹ Morph. Arb. v. p. 508 (1896).

² Owen, 'Anatomy of Vertebrates,' ii. p. 384, fig. 247 a (1866).

³ G. E. Dobson, 'Monograph of the Insectivora,' p. 121 (1882).

⁴ Semon's 'Forschungsreisen, II.' v. pp. 372, 373 (1897).

position corresponds perfectly with one which in other Marsupials (e.g. *Petaurus* and *Trichosurus*) is perfectly distinct and is interpreted as lunatum (intermedium)."¹ In the stages figured on plate 33 (figs. 5 & 6) the element of *Phascolarctus* is not entirely independent, "sondern bereits dem Radius angewachsen.—In weiter ausgebildeten Stadien finde ich keine Spur von einem solchen Element mehr, aber der Radius besitzt an der entsprechenden Stelle einen mehr oder weniger deutlichen Vorsprung, den ich als dessen Homologon betrachten möchte." Now, not only the position of this element of *Phascolarctus*, but also what Emery states about its subsequent fusion with the radius, correspond so exactly with what I find in the above-named Rodents, that both appear to be homologous. The so-called scapho-lunar of *Otenomys*, *Mus*, *Brachyuromys*, &c. would then at first sight seem to be a greatly enlarged scaphoid, which has overtaken the functions of the lunar, the latter having become reduced and eventually fused with the radius.

Whenever we find in the carpus or tarsus of a species or whole group a large bone occupying the same place as two smaller bones in another, the conclusion nearest at hand is that the single bone is the result of the fusion of two originally distinct ossicles. But this inference is by no means always valid. I have elsewhere undertaken to demonstrate that the hamatum of Mammalia is not a compound of carpale 4 and carpale 5, but is carpale 4 only; for the obvious reason that there is a carpale 5, which however is generally cut away in the skeletons, being considered as a despicable sesamoid. In other instances it either vanishes or becomes fused with the tuberosity of the fifth metacarpal; it fuses with carpale 4 only in the case of a few Cetacea.

I will here give another remarkable instance of a similar kind. In the small Rodent group Bathyerginæ, the genera *Bathyergus* and *Georychus* (*capensis*) exhibit in their carpus a distinct ossicle, which from its position we call centrale; proximad it articulates chiefly with the equally distinct lunatum, and distad with the third and second carpale (magnum and trapezoideum). In the closely allied *Myoscalops* there is, occupying the place of the centrale and the trapezoideum of the former two genera, only one bone, which runs obliquely from the lunatum to the carpale 1 (trapezium) and, on its way, articulates also with carpale 3, as does the centrale of the two fore-named genera, and with the scaphoid and meta-carpale II., as does the trapezoideum of *Bathyergus* and *Georychus*. In the tarsus of the same genera occurs the following curious parallel. In *Bathyergus* and *Georychus* the navicular is separated from the second metatarsal by the tarsale 2 (mesocuneiforme); in *Myoscalops* the navicular encroaches on the space occupied by the mesocuneiforme of the former two genera and articulates with the second metatarsale; so that the mesocuneiforme seems to be missing in *Myoscalops*. The obvious inference from this condition will of course be that the single bone in the carpus of *Myoscalops* is a

¹ L. c. p. 373.

centrally-trapezoid, viz., the result of a fusion of these two ossicles, which remain distinct in *Bathyergus* and *Georchus*; and that likewise in the tarsus of *Myoscalops* the single bone is a scapho-mesocuneiforme. However, on examining closely the tarsus of *Myoscalops*, I discover an almost imperceptible ossicle, comparable to a minute pin's head, attached to the proximo-tibial angle of the second metatarsal; this cannot well be anything else than the greatly reduced mesocuneiform, whose place and function has devolved on the enlarged navicular. We may further conclude, *per analogiam*, that the single bone in the carpus of *Myoscalops* is not a compound of the centrale with the trapezoid, but that the former has usurped the place of the latter, which has either completely vanished, or had become so minute that it was removed in the cleaning of the carpus.

The same reasoning cannot however be resorted to in the case of the supposed lunar of the above-mentioned Muridæ, because in *Lepidolemur* I have come upon an ossicle (*x*, fig. 6), occupying exactly the same position on the palmar side as in the Rodents; whereas in *Lepidolemur* an undoubted lunatum is present besides. We must therefore look elsewhere for the homologue of the accessory ossicle of Muridæ, *Lepidolemur*, and possibly also of the above-named Marsupials.

Kohlbrügge describes and figures in the carpus of *Hyllobates syndactylus* a small bone, situated between the radius and the ulnare; "a fibrous ligament connected the ossicle with the radius and the ossiculum Daubentonii, cartilaginous tissue intervening between both."¹ Kohlbrügge calls the ossicle "*ossiculum Camperii*," the here following description by Camper of a similar occurrence in the "Mandrill" referring apparently to the same ossicle: "In the manus of the Mandrill I found on Feb. 9th, 1779, a fourth supernumerary ossicle in a ligament, which took its origin from the outside of the triquetrum and was inserted on the navicular, which latter was fastened to the radius by a small ligament."² Thilenius identifies this *ossiculum Camperii* with the "*intermedium antebrachii*" of the human embryo³, which in one instance was found in adult man by Pfizner⁴. The last-named author found besides an "*intermedium antebrachii*" in the left fore-limb of a *Phascolumys*⁵; the specimen is figured by Thilenius⁶: it presents itself in the form of "a roundish ossicle, situated

¹ J. H. F. Kohlbrügge: "Versuch einer Anatomie des Genus *Hyllobates*." M. Weber, Zool. Ergebn. einer Reise in Niederländisch Ost-Indien, i. pp. 338, 339, pl. xvii. fig. 10 (1890-91).

² "Naturkundige Verhandelingen van Petrus Camper over den Orang Outang etc.," p. 87, footnote (b) (1782).

³ G. Thilenius: "Das Os intermedium antebrachii des Menschen," Morph. Arb. v. p. 8 (1895); id., "Unters. üb. d. morphol. Bedeut. accessor. Elemente am menschl. Carpus (und Tarsus)," Morph. Arb. v. p. 501 (1896).

⁴ W. Pfizner, in Verh. Anat. Ges. 7. Vers. Göttingen, p. 191 (1893) ("Triquetrum secundarium"); id., Morph. Arb. iv. p. 505 (1895).

⁵ Verh. Anat. Ges. 7. Vers. Göttingen, l. c.

⁶ Morph. Arb. v. pl. i. fig. 12 (1895).

between the radius and the ulna, and articulating with the former, . . . its position was distad from the ligament connecting the radius and ulna, but proximad from the wrist fissure" (Handgelenkspalte).¹ To judge from the figure, this ossicle of the *Phascolomys* is situated slightly more proximad than in the Rodents and in *Lepidolemur*.

It is not for me to decide whether the ossicle of the Primates, Rodents, and *Phascolomys* is really the homologue of the human so-called intermedium antebrachii, which last in the embryo as well as in the adult is situated more ulnad, and—when it does not disappear by reduction—becomes fused with the proc. styloid. ulnæ, or secondarily imbedded in the meniscus.² The alternative is, that the "intermedium antebrachii" of man may be, after all, the same element of human embryos which Thileuius has called ulnare antebrachii³, which corresponds to Pfitzner's pisiforme secundarium in the adult⁴, and is besides the homologue of the "ossiculum Daubentonii" of *Hyllobates* and *Inuus*⁵. To judge from Leboucq's⁶ and Kohlbrügge's⁷ figures and descriptions, the ossiculum Daubentonii must be assigned to the carpus rather than to the antebrachium. It seems to form, as a rule, the proximal portion of the pisiform of Mammals, except in man⁸, and I consider it therefore as a marginal ulnare—the first, proximal, element of the fifth ray.

Mr. C. W. Andrews read a paper on the osteology of one of the great extinct birds of Patagonia, *Phororhacos inflatus*. He described in detail the structure of the skull and skeleton, and compared them with various recent forms of birds. The evidence as to the affinity of this type was somewhat conflicting, but on the whole pointed to a relationship with the Gruiformes, as had been previously suggested by the author. It seemed probable that the aberrant *Cariama* was the nearest living representative of *Phororhacos*, being related to it somewhat in the same fashion as the small modern Armadillos are to such great extinct forms as *Glyptodon* and *Panochthus*.

This paper will be published in full in the Society's 'Transactions.'

¹ Morph. Arb. v. p. 10 (1895).

² Morph. Arb. v. p. 7 (1895).

³ Met with in ten manus of five embryos, and situated palmar and ulnar from the proc. styl. ulnæ, and proximad from the pisiform. See Morph. Arb. v. p. 470 (1896).

⁴ In five cases a proximal process of the pisiform was found. "Dieser Fortsatz war (in vier Fällen) proximal, und zugleich eher etwas dorsal als velar, gerichtet. Seine plane Fläche stellt eine continuierliche Fortsetzung der Gelenkfläche des Hauptstücks dar; im Uebrigen war der Fortsatz ringsherum durch eine tiefe Einziehung abgesetzt." Morph. Arb. iv. p. 508 (1895).

⁵ Kohlbrügge, *l. c.* pp. 338, 339, pl. xvii. fig. 9 (1890-91).

⁶ Arch. de Biologie publ. par Van Beneden et van Bambeke, v. p. 83, pl. iv. fig. 28.

⁷ *L. c.*

⁸ Leboucq, *l. c.* p. 83.